

## The effect of yoga training with different sessions on mental health and some blood factors in non-athlete women

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**Abstract:** This research was done to investigate the effect of 6 weeks yoga training with different sessions on mental health and some blood factors (Glucose, Cholesterol, LDL, HDL and Triglycerides) of female teachers in Avaz. 100 female non-athlete and healthy teachers with the mean age of (35±2.5) were divided into 4 groups randomly. The first group was session yoga training in a week group, the second were 2 sessions yoga training in a week, the third group were 3 sessions' yoga trainings in a week and the fourth group was the people without yoga training or control group. Every yoga session is taking 90 minutes (including Asana, Pranayama and Shavasana training). The survey instruments were international questionnaire of SF36 used for measuring mental health, related components and the required equipments for blood test to measure blood factors measured as pre-test and post-test. In the statistical analysis at first one-way ANCOVA and Sequential Bonferroni test were used and for all the hypotheses significance level was used 0.05. The results showed a significant difference between the studied blood factors and mental health eight components in the third group with the control group. The current data can be effective in the design of yoga trainings programs to improve mental health and life quality and improving blood factors for different people.

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### 1. Introduction

As women are including half of the population in the world, they are important from different aspects and they should be considered in various planning of the community (Abbott et al, 2010). The general attitude of a woman to her body and her physical performance had direct influence on her general attitudes because her body and mental health form her social relationship with the others (Abbaszadeh et al, 2009; Vempati et al, 2002). It is obvious that women emotional security increase the general security of the family (Augner et al, 2010; Leforge, 1999). On the other hand, each member of the family especially women health had direct influence on the general health of the family (Abbott et al, 2010; Augner et al, 2010). Thus, providing body and mental health for women namely female teachers who are responsible for children education is of great importance. Canadian Mental Health Association defines mental health as "the ability to adapt with our selves and others vies and facing with life daily problems". The physical and mental health of the people is influenced by different factors (Sharma, 2009). One of the most essential human being needs that are including the main conditions of mental health, are assurance, feeling secure and happiness and sport is one of the ways to achieve this important case (Padav et al, 2004; West et al, 2004). Sport and physical activities have crucial role on

mental health. As especial physical trainings improve life indices including mental disorders, emotional health and fatigue, physical and mental health, thus, women by exercise can achieve good behavior, morality and personality characteristics for a healthy and happy life (American Psychiatric Association, 2002; Ashok et al; 2005; Goldstein, 2004). Many researches showed that sport in addition to being a valuable tool for physical health, has close relationship with mental health namely prevention of mental disorders (Deshpande et al, 2009; Kauts et al, 2009; Macdonald et al, 2009; Malathi, 2001).

Malathi (2001) believes that one of the physical activities that can have crucial role on the physical and mental health is yoga. The reality is that by doing this sport we can guarantee the mental and physical health (Apatuff, 2001; Barnes et al, 2004 Theodore, 2000). The pioneers of this field were scholars who can make some principles based on medicinal science, education and psychology that can have influence on physical and mental health (McCartney, 2001). Yoga reduces depression and anxiety and increases self-confidence (Barota et al, 2001; Ventis, 2002). Generally, the people who do yoga are having high intelligence, less fatigue, order and motivation, self-confidence and more output (Perez-De-Albeniz, 2000). Participating in yoga activities, help socialization, achieving skill, adequacy, and also making friends and health

relationship with peers (Rao et al, 2008). The researches show that yoga has positive effect on cognitive performances and intelligence (Rozzano, 2001). Some of the researchers believe that there is not such relationship (Rangan et al, 2009).

Researches showed that after yoga trainings even there should be recovery in cognitive performance of old patients with mental problems and this is due to this fact that unavoidable involvement of the brain in physical activities is an important factors in recovering and hindering cell-body destruction of aging in which mental capabilities of the old people will be changed positively (Anonymous, 2005; Brown, 2005).

The researchers also found that the old people who took part in yoga training for 1 hour in a day for 3 times in a week during 4 months their performance got better in doing memory tests (Chauhanss et al, 2005). The various researches showed that yoga increases creativity, independence, stress release and more close relationship with the people (Paluska et al, 2000; Lindwall et al, 2005). Also, yoga increases popularity and social adaptability of the people (Alfermann et al, 2000). On the other hand, yoga as some medicinal compounds releases serotonin, Norepinephrine and Dopamine (Khalsa, 2010).

The effect of yoga on job behavior is investigated. Doing this physical activity is with the considerable reduction in job absence. These activities are related to mental health and reduction of heart problems that are the most important reasons of absence in work place (Goldstein, 2004; Rani et al, 2002). The people after doing physical activities of yoga observe a kind of positive or health and improvement of life quality are observed (Wilmore, 2001; Holmes et al, 2003; Agrawal, 2003). Therefore, yoga physical activity has great share in mental and social security for people and providing mental health and healthy life (Goldstein, 2004; Delmonte, 2000).

Although there are many researches about the effect of yoga, most of these studies are about the diseases, conditions and physiological disorders. Also, in our country yoga is less common. This question is raised that whether we can improve our mental health by this physical activity? If this is the case, how much exercise in a week can apply this effect? Here in this study we are going to investigate the effect of different yoga trainings on the mental health of female teachers to take a great step toward improving the health of female teachers.

This research is semi-experimental and field survey in which the effect of independent variable (yoga trainings with different practice sessions) in dependent variable (mental health) with the pre-test

post-test design and it was investigated by control group and the research data was collected in Jan 2009.

a. Statistical population and the selection methods of subjects

Statistical population of this research was non-athlete teachers and volunteers participating in Yoga trainings who were informed by call for invitation in Education office of Ahvaz who were teaching in 2009-2010. The statistical sample of this research are 100 female teachers, the personal characteristics questionnaire of these subjects are used to determine personal indices such as age, weight, marital status, the number of children and education level, physical activity, physical and mental health and etc. and it showed that the subjects were physically and mentally healthy and they didn't do any especial physical activity, they had all BA or MA degree and the mean age was between 33to 37. The subjects before starting yoga training stated their written agreement and participated as volunteer in the research. Before yoga training the subjects were divided as randomly in 4 groups:

- 1- Yoga training group 1 session in a week (25 persons)
  - 2- Yoga training group 2 sessions in a week (25 persons)
  - 3- Yoga training group 3 sessions in a week (25 persons)
  - 4- Control training group (25 persons)
- b. Research instrument

Research instrument questionnaire was SF 36 that is globally used for the measurement of the subject's mental health. This questionnaire is consisting of 36 questions and measures two general dimensions and 8 components related to mental and physical health. Two general dimension of this questionnaire are physical and mental health and each of these two dimensions includes four components. General dimension of physical health are physical performance activity, physical problems, physical pain and public health that are measured. And the general dimension of mental health is related to measurement of happiness, excitement limitations, social performance and mental health. This questionnaire is used in most of local and international researches and its validity and reliability are proved. For example, Hadi (2006), Montazeri (2005), Taherkhani (2003) in their study reported the reliability of this questionnaire respectively as (0.85), (0.95) and (0.87).

To calculate the reliability of this questionnaire in the current research, Cranach's alpha coefficient is used and it was reported equal 0.89 and the validity of this questionnaire was reported as 0.6 by Montazeri and Gondak (2005). This questionnaire was filled out by subjects of four groups before

holding the first session of the training (pre-test) and after the final session of yoga training (post-test).

c. Training protocol

Training conditions for all the subjects were similar and the subjects according to the program they received from the researchers, participated in the training sessions. Training duration was 6 weeks and the number of training sessions was different for different groups. Each training session takes 90 minutes and in each session the subjects after about 10 minutes warm up (including walking, mild stretching and respiratory training), they did the main stretching and respiratory trainings for 75 minutes and finished training session with 5 minutes cooling process including (respiratory training and Relaxation training). The subjects exercised the trainings in group and the researcher was controlling all training process in all exercise sessions. Control group only filled out SF 36 questionnaire in pre-test and post-test and they didn't participate in training sessions.

d. Statistical methods

For data analysis in this research the following statistical methods are used:

1- Descriptive statistical methods such as the calculation of frequency, percent, mean and standard deviation.

2- One-way ANCOVA: in ANCOVA, confounding variables are controlled, it means that their effect is removed from test scores and then the remaining scores mean of the research groups are compared. In this research in hypothesis test, in post-test stage, confounding variable is controlled. It means that its effect is removed from post-test scores and then the remaining score mean of the experimental and control group were compared. Also, sequential Bonferroni test was used for the comparison of the groups.

To analyze the collected data, SPSS software, version 17 was used. Also, for all the hypotheses the significance level of  $\alpha=0.05$  was used.

## 2. Results

Descriptive findings of this research including statistical indices such as mean,

Standard deviations of mental health of the subjects are shown in table 1.

As it is seen in table 1, in pre-test stage, mean and standard deviation of mental health of each groups are respectively 1 session yoga training 50.22 and 13.93, 2 sessions of yoga training 51.33 and 15.10, 3 sessions yoga trainings 50.22 and 16.47, control group 50.89 and 14.17 and in post-test stage the mean and standard deviation of each groups are respectively 1 session yoga trainings 51.78 and 15.30, 2 sessions of yoga training 51.56, 15.57 and 3

sessions of yoga training 62.22 and 15.29 and control group are 47.11 and 13.48.

Table 1: Mean, standard deviation of mental health score of experimental groups and control groups in pre-test and post-test stages

Variable	Statistical index		Average	SD	N
	Stage	Group			
Mental health	Pre-test	1 session yoga training	50.22	13.93	25
		2 sessions yoga training	51.33	15.10	25
		3 sessions yoga training	50.22	16.47	25
	Post-test	Control (without practice)	50.89	14.17	25
		1 session yoga training	51.78	15.30	25
		2 sessions yoga training	51.56	15.57	25
		3 sessions yoga training	62.22	15.29	25
		Control (without practice)	47.11	13.48	25

As it is seen in table 2, by pretest control among female teachers, the experimental group and control group are significantly different in terms of mental health ( $p < 0.027$ ,  $F=3.23$ ), the significant difference between the groups by one-way ANOVA doesn't show that between which group there is difference so after this test, Sequential Bonferroni test was used and its results are shown in table 3.

As it is seen in table 3, there is significant difference between post-test mean of mental health of female teachers of group test 3 (3 sessions yoga training) and control group (without training), in other words, 3 sessions yoga training per week considering the average of experimental group

mental health of the female teachers of group 3 in comparison with the average of female teachers of control group increased mental health of female teachers of experimental group 3.

Table 2: The results of one-way ANCOVA the comparison of the post-test mean of the mental health of female teachers participating in experimental and control groups with pre-test control

Changes source	The sum of squares	Freedom degree	Mean of squares	F	P significance level
Pre-test	1.23	1	1.23	0.005	0.941
Group	2118.72	3	739.57	3.23	0.027
Error	15171.21	67	236.43		

Table 3: The results of Sequential Bonferroni test between mean scores of post-test of mental health among female teachers participating in experimental and control groups with pre-test control

Groups	Mean	1 session training	2 sessions training	3 sessions training	Control (without practice)
1 session yoga training	51.78				
2 sessions yoga training	51.56				
3 sessions yoga training	62.22				- (0.022)
Control (without practice)	47.11				

So, the first hypothesis is supported. There is no significant difference between groups 1 and 2 of yoga training session in a week and control group. This case has the lack of significant influence of 1 and 2 yoga sessions in a week on mental health.

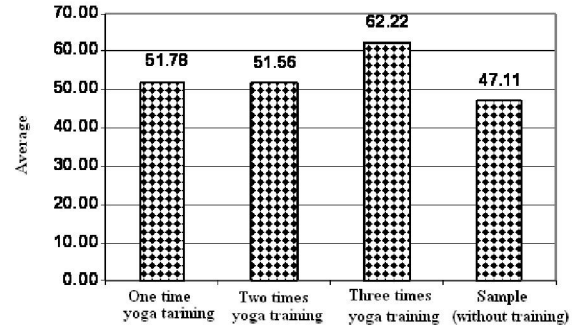


Chart 1: The comparison of post-test mean of mental health of female teachers in experimental group and control group.

### 3. Discussion and Conclusion

One of the most essential human being needs that are including the main conditions of mental health, are assurance, feeling secure and happiness and yoga is one of the ways to achieve this important case. Yoga plays an important role on mental health (Ashok et al, 2005).

The results of the current research showed that yoga improves mental health of female teachers participating in the test. As it was seen in the table, 3 sessions yoga in a week had significant influence on mental health of subjects of this group at significant level of  $\alpha=0.05$  but 1 and 2 sessions yoga in a week didn't have significant influence on mental health of the subjects. So, it can be said that by increasing the length of training, we can change this variable in participants.

These results are compatible with Leforg et al (1999) and Macartni (2000). By different researches, they showed that yoga training improves life indices including mental health. This is due to increasing endorphines of the subjects that is increased influenced by sport activities and can make the person happy by influencing the central neural system. Sport activity can increase self-confidence (Goldstein et al, 2004; Harinath et al, 2004; Anderson et al, 2010; Chaya et al, 2008).

Often the shortage of neurotransmitters (such as GABA) enzyme is seen in depressed people. In a test carried out on people who practice yoga, GABA is increased. According to the researches, yoga for 1 h in a week increases GABA as 27%. Thus, yoga can decrease stress and anxiety and prevents depression (American Psychiatric Association, 2002; Barota et al, 2001; Cohen, 2005).

Therefore, continuous sport trainings increase blood circulation in the brain. The increased in blood circulation increase oxygen and better feeding of brain neurons and prevents brain arteries narrowing these influences prevent Alzheimer and



destruction of mental capabilities in old people (Brown et al, 2005).

Keeping the body healthy by yoga and good nutrition helps the mental health (Deshpande et al, 2009; Gupta et al, 2006). This is due to this fact that yoga changes the amount of chemical compounds in the brain and increases blood circulation and oxygen attraction. These changes can influence central neural system and make the person happy (Brown et al, 2005). Yoga also gradually changes mental nature and physical activity can hinder disturbing and negative thoughts in the mind (Chaya et al, 2008).

The people, who do yoga often, can control their emotions and steam off their anger and anxiety through training (Kauts et al, 2009; Rozzano, 2001; Delmonte, 2000).

As the body and soul have close relationship and disorder in one of them influence the health of the other (Padav et al, 2004, McCartney, 2001) and the type of life especially in big and industrial cities deprived them of their natural needs and prepare the ground to suffer from mental diseases. Therefore, in the current societies, most of the people are not in good mental and physical health and some sports such as yoga can increase mental health (Leforge, 1999; Macdonald et al, 2009; Malathi, 2001; Rangan et al, 2009; Alfermann et al, 2000). Meditation claims to activate the parasympathetic- limbic pathway that relaxes body and mind (Lindwall, 2005; Tulchinsky, 2000). In meditation, parasympathetic neural system is activated to counteract the parasympathetic system, responsible for bodily nourishment and recuperative functions, such as resting and restoration (Theodore, 2000; Nagendra, 2008; Anand, 2001). The parasympathetic- limbic activation achieved through the meditation relaxes us by bringing us "into the "center" (Barota, 2001; Nagendra, 2008). A person who is doing sport in comparison with the person who does not do sport, consumes less energy and apply less pressure to his body (Macdonald et al, 2009). The general influence of the other regular trainings helps the growth of body (Malathi, 2001). Regular trainings in women improve their breathing, digestion, bowl system and make the muscles strong (Padav et al, 2004; Rozzano, 2001; Khalsa, 2010). Sport allows women and girl release their stored emotions (Leforge, 1999) and increases their tolerance against problems in life (Harinath et al, 2004).

Naturally, human being is a social creature who wants to communicate with others and others want to have this communication either. This social instinct can be fulfilled by yoga (Barnes et al, 2004). Yoga makes you achieve social values such as teamwork, loyalty and sport morale (Apatuff, 2001). Friendly environment of sport often is a good

opportunity for social relationships and forming morale (Harinath et al, 2008) and yoga makes the timid and shamefast girls and women more social to adapt with different people in their daily life (Khalsa, 2010; Anand, 2001).

But if we ignore intensity and duration of the training attribute, the research results are compatible with the results of Oji (2001), Taherkhani et al (2003), Hadi et al (2006), Alferman (2000), Rezano (2001), Deshpande et al (2008), Kats et al (2009), Rengan et al (2009), Macdonal and firedman (2009) and there is not incompatible research result.

The results of this research showed that yoga training for 3 sessions in a week can have significant influence on all 8 factors of mental health and improve them. Also, yoga training for 1 session in a week except for physical performance components didn't have any significant effect on other 8 factors of mental health. Thus, to achieve the required result, training duration should be increased. Yoga training for 2 sessions except for physical performance component didn't have any significant influence on 8 factors of mental health.

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